A Review of the Recovery Data obtained by the Bombay Natural History Society's Bird Migration Study Project

By

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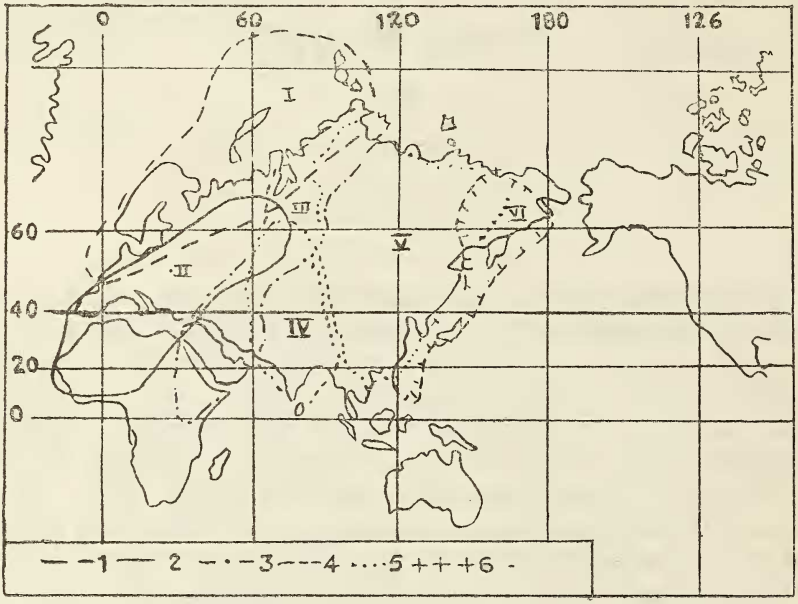
(*With a text-figure*)

Study of bird migration on a continuing basis was started by the Society in September 1959 to investigate (1) the routes used by birds moving into and out of India in autumn and spring and (2) the role of birds in disseminating arthropod-borne viruses. Up to mid 1969, 1, 32, 368 migratory and resident passerine and non-passerine birds of 25 families and 150 species have been ringed, and recoveries recorded of 520 birds ; 451 of these being from places outside India, namely Burma, East and West Pakistan, Afghanistan, the U.S.S.R., and Cyprus, and 69 from within the country. The gross recovery is slightly under 4 birds for every thousand ringed, a figure far too low for suggesting definite conclusions. My aim in this paper is to review the recovery data in a consolidated form and to examine what light these throw on the origin and routes of our migratory birds. The recovery information on the more numerous species is discussed in detail and compared with local observations published in the Society's *Journal* and the *Ibis* within the last fifty years. The data obtained from random ringing of ducks by the Society's members between the years 1920 and 1940 are also used, but references to the total number of birds ringed mean unless mentioned otherwise only those ringed by the Society or its collaborators at various stations between 1959 and mid-1969.

Recoveries of Ducks and Teals

The Society has ringed 7740 migratory ducks and teals (Family Anatidae) mainly at Bharatpur, Rajasthan; Monghyr, Bihar; near Dibrugarh, Assam (M. J. S. Mackenzie) and at Chilka Lake in Orissa. At Orissa ringing was done in collaboration with the Genetics and Biometry Laboratory, Bhubaneshwar. Including recovery data from

other sources I have examined 438 duck recovery records, out of which 386 were either ringed or recovered in the U.S.S.R. One has to examine not less than 50 cases of each species ringed or recovered in their breeding area to know precisely the area of origin of our ducks. This is possible only for one species at the present time. Yu. A. Isakov (1965) demarcated 7 distinct populations of waterfowl in Russia.



Area of the main geographical populations of the water fowl of the USSR
After Yu. A. Isakov and T. P. Shevareva

I. The Northern Baltic—North Sea. II. The European=Siberian—Black Sea=Mediterranean. III. The West Siberian—Caspian=Nile, IV. The Siberian=Kazakhstan—Pakistan=India. V. The East Siberian=Amur—Korean=Chinese. VI. The Far North=Eastern—Japanese. VII. (Not shown on map) The Cheukotka—North American population.

Isakov's grouping is summarised in the map above. As a rule the areas occupied by neighbouring populations overlap one another. Populations II-VI, all contain large numbers of surface feeding ducks (Mallard, Teal, Garganey, Pintail, Wigeon and Gadwall) all of which concern us. The wintering grounds of population II (Black Sea and Mediteranean) are getting reduced due to reclamation of wetlands. Members of IV (Kazakhstan-Indian) should, according to this grouping, be dominant among the ducks wintering in our country. This population breeds (Isakov 1965), in West Siberia to the north up to the mouth of the Irtish and the greater part of Kazakhstan and Middle Asia. Population V (East Siberian-Chinese) breeds, in an extensive area from the Enisei (longitude *c.* 90°E), in Central Russia to the Pacific

Ocean and from the Tundra of Siberia to the southern boundaries of Russia. In interpretation of recoveries of ducks ringed in India, one should keep in mind the drawbacks listed below :

1. There are only 438 recovery reports available for examination.
2. There is a possibility of mixing and interchange of breeding populations in areas where their breeding grounds overlap. This is possible in the cases of population II to V.
3. As Isakov points out the wintering grounds get altered by reclamation of wetlands and creation of artificial reservoirs. These may influence the selection of wintering grounds by birds.
4. Migration maps constructed by connecting points of ringing with those of recovery are therefore only of limited usefulness and are not meant to indicate actual migration routes.

Anas acuta Pintail

Out of a total of 1551 Pintail ducks ringed at Bharatpur, Chilka Lake, Orissa, Monghyr and Dibrugarh, Assam, 64 have been recovered from places in the U.S.S.R between Kara Kalpakskaya (*c.* 42° 25′N ; 59° 30′E.) and Yakutian (*c.* 62° 32′N ; 113° 48′E). Out of the 64, twenty-one were recovered within or before the next spring. There were 8 recoveries within Indian limits. Including recoveries of birds ringed elsewhere, I have examined 78 Pintail recoveries. From a total of 22 Pintails ringed by Mr. Mackenzie near Dibrugarh in February 1966, one was recovered in Buriyatian (*c.* 52° 20′N ; 106° 23′E) ASSR on 6 May, 1966 and another in Novosibirsk Region (*c.* 54° 22′N; 77° 18′E) on 5 October 1966. The northernmost point from which a Pintail was reported was in Tyumen Region (*c.* 66° 30′N ; 67° 48′E) where a Bharatpur ringed (19 October, 1965) bird was reported on 27 May 1967. Twelve other Pintails ringed at Bharatpur in October 1966 were recovered in the USSR (Table 1). A female Pintail ringed at Chilka Lake (*c.* 19° 49′N ; 86° 40′E) on 15 January 1967 was reported in Tomsk Region (*c.* 57° 22′N ; 83° 54′E) on 11 May 1967 at a straight-line map distance of some 4000 km. north of Orissa. There are old records of three Astrakhan Pintails recovered in Gujaranwala district, West Pakistan, Ahmedabad, and 50 km. south of Madras city. Two Kurgaldzhin (*c.* 50° 30′N ; 69° 35′E) birds were recovered at Srinagar, Kashmir and Bhuj, Kutch and a Novosibirsk Pintail near Etah, U.P. (*c.* 27°N ; 72′E). The oldest recovery is of a pintail ringed at Dhar (*c.* 22° 35′N ; 75° 29′E) in February 1926 and recovered near the River Tira (*c.* 62°N ; 100°E) on 25 May 1927. The following observations are also interesting :

Sheriff (1929) recorded many flights of Pintail between Yarkand and Karghalik (*c.* 39°N ; 77°E) late in February. Ludlow (1934) noted

large flocks of Pintail passing through Kashgar, Chinese Turkestan, in late February and saw a female with ducklings at the junction of Rivers Agiass and Tekkas (*c.* 43°N ; 81′E) on 12 May, and collected

TABLE 1

RECOVERIES OF PINTAIL (*Anas acuta*) RINGED AT BHARATPUR

Sl. No.	Date of ringing	Sex	Date of recovery	Place of recovery	Co-ordinates	Straight-line map distance from Bharatpur
1.	21-x-1966	♂	3-iii-1967	Kara-Kalpakskaya	42° 25′N; 59° 30′E.	*c.* 2250 km.
2.	23-x-1966	♂	11-iii-1967	Tashkent	41° 15′N; 68° 00′E.	*c.* 2100 km.
3.	6-x-1966	♂	5-iii-1967	Fergana	40° 13′N; 70° 50′E.	*c.* 1750 km.
4.	6-x-1966	♀	19-iii-1967	Alma-Ata	43° 21′N; 77° 36′E.	*c.* 1750 km.
5.	10-x-1966	♂	22-iii-1967	Alma-Ata	45°40′N; 79° 26′E.	*c.* 2400 km.
6.	23-x-1966	♂	27-iii-1967	Alma-Ata	45° 56′N; 78° 45′E.	*c.* 1900 km.
7.	13-x-1966	♀	12-iv-1967	Altaisk	50° 54′N; 80° 06′E.	*c.* 2600 km.
8.	8-xii-1967	♂	3-v-1968	Tyumen	60° 40′N; 69° 45′E.	*c.* 3600 km.
9.	23-x-1967	♂	15-v-1968	Irkutsk	57° 24′N; 98° 10′E.	*c.* 3600 km.
10.	26-x-1967	0 ?	24-v-1968	Yakutian, ASSR.	62° 72′N; 113° 48′E.	*c.* 4600 km.
11.	27-ii-1968	♂	13-v-1968	Tomsk	57° 3′N; 86° 9′E.	*c.* 3400 km.
12.	3-iii-1968	♀	10-v-1968	Krasnoyarsk	63° 10′N; 88° 00′E.	*c.* 4100 km.

Pintails at Goma (*c.* 37° 40′N ; 78° 15′E) in September. Further south Pintail has been observed on passage at : Chitral (*c.* 36°N ; 71′E), Perreau (1910) ; Kohat (*c.* 33° 30′N ; 71° 30′E), Whitehead (1911) ; Zuildo, east of Wular Lake (*c.* 34° 20′N ; 76°E) on 27 June 1927, Osmaston (1930). Ticehurst (1927) and Christison (1941) observed Pintail passing through Baluchistan both in spring and autumn. One Bharatpur ringed pintail (February) was shot at Sangroor, Punjab in December the same year. Further east the species was observed at Ngayeze (*c.* 30° 40′N ; 81° 30′E) in June, Sâlim Ali (1946) ; Ghazipur (*c.* 25° 30′N ; 83° 30′E) Briggs (1934) ; on the large rivers at Jalpaiguri District (*c.* 27°N ; 89°E) Inglis *et al.* (1920) ; and at Kala Lake, Tibet (*c.* 38°20′N ; 89° 20′E) Ludlow (1928). In Northern Mongolia E. V. Kozlova (1932)

recorded big flocks on Lake Orok Nor (*c.* 45°N ; 101′E), on 4 April. All these observations—except where months were given—were made between February and April.

An interesting local recovery of a male Pintail ringed at Bharatpur on 18-x-1965 was made at Karimnagar in Andhra Pradesh (*c.* 18° 26′N ; 79° 8′E) in the 2nd week of December, 1965. Further south, Nichols (1945) found Pintails fairly common in Madurai District up to March. In the recent wildfowl count organized by the wildfowl survey, Subbiah Pillai (*in lit.* ; 1967) counted about 1,000 Pintail at a tank in Tirunelveli District on January 9. Phillips (1956) considered the species as a frequent visitor to Ceylon arriving at the end of November and leaving in late March and April. Ringing of the species in south India will help in understanding its movements in peninsular India and Ceylon.

To summarise, 78 recoveries of Pintail were examined out of which 62 were from the breeding or wintering range of Kazakhstan population of Russia. Out of the 62, seventeen were of Indian ringed birds recovered in Russia between April and June, a period within which these could be either in movement or breeding. Ten Indian birds were recovered in East Siberia, (5 in May), and two in the range of the West Siberian population of the USSR.

Anas crecca Common Teal

The Society has ringed 3093 birds of this species, and up to August 1969, 185 birds were recovered, out of which 175 were from outside India. I have examined 21 recoveries of the species ringed elsewhere. Out of 567 common teals ringed in Monghyr District (*c.* 25° 30′N ; 86° 30′E) Bihar (1964-65), 39 were recovered till August 1969, 24 of the recoveries being reported in East Siberia. Of these 24, fifteen were recovered in April and May, and 7 among these within a space of 6 months from the time of ringing. Where these eastern birds cross the Himalayas and whether they fly over directly north from their wintering grounds as is suggested if one literally interprets recovery maps, cannot be satisfactorily answered with the available information.

La Touche (1934), recorded the Common Teal as occurring all over China in winter in very large numbers. In northern Mongolia, Kozlova (1932) found this teal to be a common breeding bird in the Kentei Region (they were on Lake Orok Nor from 5 April to middle of May). Inglis *et al.* (1920) found the Common Teal migrating in large flocks through Jalpaiguri District (*c.* 27°N ; 89°E), in April. Ludlow (1928) noted the species passing through Gyantse, Tibet, in spring and autumn and in 1944 found enormous numbers of Mallard, Common Teal, Wigeon, Pintail, Tufted and White-eyed Pochards at Yamdrok Tso (*c.* 29°N ; 91°E) in mid-March (Ludlow 1927). He believed that the

ducks congregating around Gyantse, cross the Himalayas directly south and north at the appropriate time. Ludlow reasoned that since the distance between Gyantse and the Indian plains could be covered within a few hours' flight the birds would prefer a direct course. Dorst (1962) observes ' birds do not take the easiest routes over mountains—the travellers do not hesitate to cross the highest peaks '. Desirée Proud (1949) found the Common Teal to be abundant during the migrations and regularly crossing the Nepal Valley (*c.* 27-28°N ; 85-86°E) both during autumn and spring. The two Bihar ringed Common Teals recovered in Kashmir, and Uzbekistan (*c.* 40° 22'N ; 71° 47'E) fit Savage's (1965) suggestion that some of the eastern Indian birds may cross the Himalayas over the Hindukush as well.

At Bharatpur the Project ringed 2517 Common Teals up to July 1969 out of which 141 have been recovered so far; 110 of these 141 within the breeding area of the Kazakhstan population and 56 during or before the following spring (i.e. within the next 6 months), and 7 in West Pakistan. Earlier, the Bharatpur Durbar had ringed some Common Teals in winter from which 2 were recovered from West Pakistan and one from Kabul, in the following spring. Two Bharatpur ringed Common Teals were recovered in the breeding area of the European population (II) of Russia. The westernmost point from which a Bharatpur bird was reported is in Uralsk (*c.* 51° 17'N ; 51° 23'E) and the easternmost in Yakutian, ASSR (*c.* 60° 48'N ; 114° 12'E). Among Bharatpur birds recovered in the breeding area of population IV, thirty-one were reported within a narrow sector between latitudes 38° 06'N - 45° 24'N and longitudes 66° 56'E - 79° 58'E, (e.g. Tadjik 6, Uzbek 6, and Kazakh SSR 9) and 27 of these between 2 March and 12 April. Further south, Bharatpur-ringed birds were also recovered in Afghanistan, near Kabul* (*c.* 34°N ; 69°E) ; in Pakistan, Peshawar* (*c.* 34°N ; 71°E), Sialkot (*c.* 32° 30'N ; 74° 32'E), Chiniot (*c.* 31° 40'N ; 73°E) ; Sheikhpura (*c.* 34°N ; 74°E) ; Gujaranwala (*c.* 32°N ; 74°E), Swat (*c.* 34°N ; 73°E). One Bharatpur-ringed bird was collected at Jammu Tawi (*c.* 32° 30'N ; 75°E) near the River Chenab on 2-I-1967, and another in Kashmir (*c.* 35°N ; 75'E) according to a report dated 25-V-68. The exact date was not given.

Going through earlier observations one finds that Whistler (1922) noted the Common Teal to be most abundant in Jhang District, Punjab, and considered the Jhelum and Chenab as routes for migrating water birds moving north into Central Asia. In Afghanistan according to Whistler (1945), Common Teals are very common winter visitors as well as passage migrants. Ticehurst (1927), found the species passing through Munshi Char (*c.* 29°N ; 62°E) in Baluchistan ; Meinertzhagen

* Indicates birds ringed by the Bharatpur Durbar.

(1927) saw a few on the Indus (at 10,500 ft.) at Moulbekh (*c.* 34° 20′N ; 76° 20′E) in April which he believed to be on passage. In sum the pattern of recoveries of Common Teals ringed by the Project align favourably with earlier observations. Generally Common Teals ringed in India were recovered in the breeding areas of 3 population, II, IV and V of water-fowl in the USSR. More precisely, 77% of the recoveries of Bharatpur-ringed birds were reported within the breeding area of the Kazakhstan population of Russia, and 39% in the spring following the ringing. Sixty-two per cent of the recoveries of Bihar-ringed Common Teals were reported in East Siberia, but only 25% of these recoveries were made in the spring following their ringing.

Anas querquedula Garganey

The Project has ringed 984 Bluewinged or Garganey Teals (927 of these at Bharatpur) till August 1969. Thirty-eight recoveries were reported till August 1969. Including data of birds ringed elsewhere, I have examined 45 recoveries of this species. Of the 38 recoveries obtained by the Society, 31 were from the breeding area of the Kazakhstan population of the USSR, in Kazakhstan, Altai and Novosibirsk. Ten out of the 31 recoveries were made between the months of May and July, and 13 were recovered in spring of the following year. There were 2 recoveries of Bharatpur-ringed Garganeys in the breeding area of the European population of Russia, one 4 months and the other 17 months after ringing. There is a reverse case of a Garganey ringed in Leningrad district on 22 July 1961 and recovered in Sangli district (*c.* 17°N ; 75° E—Maharashtra) on 28 December 1962. A male ringed at Bharatpur on 3 October 1965 and recovered at Krasnoyarsk (57° 42′N ; 93° 15′E) on 12 May 1967, is the only Bharatpur bird recovered in East Siberia. From the area between Bharatpur and Kazakhstan, one Garganey was recovered in Kashmir (*c.* 34°N ; 74°E) on 9 March 1969 and another in Haryana (*c.* 29°N ; 76°E) on 11 January 1969. There is a record of a Russian-ringed Garganey recovered at Larkhana, Sind (*c.* 27° 50′N ; 68° 8′E) in the same year.

In China, La Touche (1934) found the Garganey to be distributed generally as a migrant. In North Mongolia, Kozlova (1932) found nest with fresh eggs on the River Tola (*c.* 47° 37′N ; 107°E) on 9 June. Her first date for Lake Orok Nor was 21 April. In Chinese Turkestan, Ludlow & Kinnear (1934) found the Garganey in pairs on 11 May at Tekkes (*c.* 43°N ; 80° 30′E) and considered the species as common in Tekkes in May and early June. Ludlow also shot birds with gonads in breeding condition then. The same authors saw a flock of twenty Garganey on the Gabshan Lake, Ladak, on 12 August.

Meinertzhagen (1927) while camped at Khardong (*c.* 34° 20'N ; 77° 45'E) at an altitude of 13,500 ft. saw a party of eight Garganey Teals being forced to settle on earth on 30 July. He considered the incident as showing how autumn passage of ducks takes place over some of the highest parts of the Himalayas.

In Bharatpur the Garganey is chiefly a passage migrant, numbers arriving as early as August. Peak numbers are reached in October and by mid-November most of the birds have passed on presumably for S. India and Ceylon where vast concentrations occur in winter. The species is comparatively rare in winter but becomes abundant again in March/April when on return (northward) passage. It is one of the earliest migrant ducks to arrive and the last to leave its winter quarters.

There are four interesting local recoveries. In one case a Garganey ringed at Bharatpur on 17 October 1965 was shot near Madurai (*c.* 10°N ; 78°E) on 21 January 1966. A second bird ringed at Bharatpur on 12 October 1966, was recovered in roughly the same direction as the above but some 500 miles north of it in Medak District, A.P. (*c.* 18°N ; 79°E) on 8 January 1967. In another case a Bharatpur-ringed Garganey was reported two years later (in October) in Tiruchirapalli district (*c.* 10° 16'N ; 78° 8'E), and the last case was of a Bharatpur bird recovered at Attur, Salem district (*c.* 12°N ; 78°E) in January, a year after ringing. Nichols (1945) recorded Garganey as fairly common in winter in Madurai District. Subbiah Pillai (in lit. 1967) counted flocks of a few hundreds of Garganey at tanks in Coimbatore, Tiruppur, Palni and Tirunelveli, Tamil Nadu. At a tank in Thatchanellur, Tirunelveli district, Mr. Pillai counted about 2000 Garganey Teals on 4 December 1966. In Ceylon, Phillips (1956) found the Garganey to be a regular visitor between November and May. He surmised that the Garganeys visiting Ceylon cross the Himalayas over Nepal and move southwards to Ceylon along the east coast of India. The Bharatpur birds recovered in Salem, Tiruchirapalli and Madurai districts point to the possibility that the Garganeys from North-western India move down further south across the Deccan to southern India and Ceylon. These may cross the sea between Point Calimere and Adam's Bridge, but as yet there is no factual evidence to support this suggestion, and birds must be ringed in South India and Ceylon to test it. Two Bharatpur Garganeys ringed on successive days moved in nearly opposite directions : one ringed on 10 October 1966 was shot at Hardoi, U.P., about 160 miles east of Bharatpur on 1 November, the other ringed on 11 October was shot at Tonk, Rajasthan, 125 miles SW. of Bharatpur 3 days after ringing. Inglis (1920), and Desirée Proud (1955) found the Garganey migrating in large flocks through Jalpaiguri district and the Nepal Valley respectively between August and October. Biswas (1960) observed the Garganey on a tank in Kathmandu in mid-March and April. To sum-

marise : 31 of 38 Garganey Teal ringed in India were recovered in the breeding area of the Kazakhstan population of Russia. These recoveries fit neatly with the earlier observations on Garganey migration at high altitudes in the Western Himalayas and in Chinese Turkestan. There were two recoveries of Bharatpur birds in the area of the European, and one in that of the East Siberian populations of Russia. There were four recoveries of Bharatpur Garganeys in south India (Tamil Nadu).

Anas clypeata Shoveller

Out of a total of 621 birds ringed by the Project, 36 were recovered outside India up to October 1968. Among these were 3 (out of 9) Shovellers ringed by P. V. George at Manjhaul, Bihar, in February and March 1964. The latter (2 females, 1 male) were all recovered in East Siberia : one of the 3 was recovered 78 days later, the second five months, and the third a year later. Savage (1965) suggested that the Shovellers wintering in eastern India breed and moult in E. Siberia. The other shoveller recoveries were as follows : December, one recovered at Samana, Patiala; January, one at Sargodha, W. Pakistan ; February, one each at Amritsar (near Sutlej), Punjab, Multan, W. Pakistan ; March, one each at Samarkand, near Asht in Tadjik, and on River Chu in Kazakhstan, and two in Alma Ata ; April, one each at Karaganda and Altai ; May, seven at Tomsk, two at Krasnoyarsk and one at Bulaevo, Kazakhstan. Between the months August and October there were 9 more recoveries of Bharatpur Shovellers at Fergana, Alma Ata, Altai, Pavlodar, Novosibirsk, Tomsk and Tyumen Regions and on the delta of the Selenga (*c.* 52° 20′N ; 106° 30′E) in the USSR. All these birds were ringed at Bharatpur between 1965 and 1969 and fifteen of the recoveries were reported within 6 months from date of ringing. A Shoveller ringed at Chilka Lake on 16-I-1967 was recovered at the Yakutian (*c.* 63°N ; 118°E) in E. Siberia on 26 August 1967. In Southern Tibet, Ludlow (1928) found the Shoveller to be fairly numerous in November. In North Burma, Stanford and Ticehurst (1939) found Shovellers passing farther south about 20 October. In northeast Chihili, China, La Touche (1921) found the Shoveller passing about the 10th of March to the middle of May and again in the early half of October. According to Madame Kozlova (1932) this species breeds in northwestern and northern Mongolia and was noted as early as 5 April on Lake Orok Nor. In the west, Meinertzhagen (1920) recorded Shovellers on migration at Quetta (Baluchistan) up to 19 May, in large numbers. Christison (1941) found the species on migration in large numbers at Zangi Nawar, Baluchistan, and Fulton (1904) in Chitral. Meinertzhagen (1927) found a large flock of the species on the Indus

near Leh (*c.* 34° 20′N ; 77° 36′E) on 1 May, on passage. Ludlow & Kinnear (1934) found the Shoveller in the following places in Chinese Turkestan ; Charbagh (28 March) Maralbashi, Tekkes (May) and Deskit (5 July). At Maralbashi these authors had found Shovellers in pairs and were informed by the local people that the species breeds there.

The recovery of a female Shoveller ringed in Bharatpur on 24 October 1966 from Samana in Patiala (*c.* 30° 9′N ; 76° 15′E) on 26 December 1966 is interesting. W. M. Hutton had ringed Shoveller in Patiala some 40 years ago (*J. Bombay nat. Hist. Soc.* **47** : 694) and one of these ringed in March 1929 had been recovered near the River Tara (56° N ; 76°E) a month later. In summary the 38 recoveries obtained so far of the Shovellers ringed in India are from the breeding area of the Kazakhstan and E. Siberian populations of the U.S.S.R. Based on British ringing records, Dorst (1962) estimated the Shovellers to have a high percentage of recovery (19·8%). Perhaps we can expect more recoveries of the species.

Aythya ferina Common Pochard

Out of 428 pochards ringed by the Society up to 1969 the following birds were recovered (Table 2). All the recovered birds were ringed at Bharatpur in the winter of 1968.

TABLE 2

RECOVERIES OF THE COMMON POCHARD (*Aythya ferina*)

Month of recovery	Place of recovery	Number recovered
1968		
November	Gurgaon Dt., Haryana (*c.* 28° N; 77°E)	1
December	Amritsar Dt., Punjab (*c.* 32°N; 75°E)	1
1969		
January	Gurgaon Dt., (*c.* 28°N; 77°E)	1
February	Surkhan-Darya, USSR (*c.* 37° 11′N; 67° 18′E)	1
March	Sargodha, W. Pakistan (*c.* 32° 4′N; 72° 43′E)	1
May	Tomsk Region, USSR (*c.* 56° 17′N; 84° 00′E)	1
,,	Tyumen Region, USSR (*c.* 64° 18′N; 65° 26′E)	1
,,	,, ,, ,, (*c.* 55° 56′N; 67° 39′E)	1
August	Balkhash Lake (*c.* 46° 6′N; 75°E)	1
September	Samarkand (*c.* 40° 34′N; 65° 41′E)	1
,,	Balkhash Lake (*c.* 46° 00′N; 74° 14′E)	1
,,	Aktyubinsk (*c.* 47° 50′N; 59° 36′E)	1
,,	Tselinograd (*c.* 52° 40′N; 70° 26′E)	1
,,	Sasyk-kul Lake (*c.* 46° 30′N; 81°E)	1
,,	Kokchetav (*c.* 53° 19′N; 69° 22′E)	1
,,	Novosibirsk (*c.* 55° 24′N; 78° 21′E)	1
,,	-do- (*c.* 54° 54′N; 80° 41′E)	1
,,	Semipalatinsk (*c.* 48° 45′N; 82° 25′E)	1
,,	Tyumen (*c.* 55° 48′N; 68° 19′E)	1

To sum up all our recoveries of the Common Pochard from Bharatpur have been reported from the breeding and/or wintering area of the Kazakhstan population of this duck in the USSR.

Recoveries of Waders

Family Charadriidae

Tringa glareola Spotted Sandpiper

The Project has ringed 4645 birds of this species to date and has received reports of 13 recoveries, three within the country and 10 extra-limitally. These birds were ringed at Bharatpur, in Bihar, and near Calcutta. Besides, two of the Spotted Sandpipers ringed by Dr. B. Biswas near Calcutta since 1967 with rings of the Zoological Survey of India have also been recovered in Eastern Siberia in July and August 1967. Of the ten recoveries of this species mentioned earlier six were reported in East Siberia. These six included 3 ringed at Monghyr district, Bihar, and 3 ringed near Calcutta. A Bharatpur bird was recovered in Tyumen Region, some 19 months after ringing and another at Krasnoyarsk 20 months after ringing. A Calcutta bird (5 April 1967) was recovered in Novokazalinsk (*c.* 45° 45′N ; 62° 9′E) USSR on 20 May 1967.

An interesting recovery of a Bharatpur sandpiper (ringed 30.x.1967) was reported from Periakotta village near Sivaganga (*c.* 9° 51′N ; 78° 30′E) on 22.xii.1968 ; and another Bharatpur bird (6.x.1967) at Rail Bazar, Lyallpur, W. Pakistan (*c.* 31° 42′N ; 73° 12′E) on 23.iv.1968. For the very long distances covered by this species between points of ringing and recovery, the spotted sandpipers apparently travelled fairly fast. One individual ringed at Calcutta on 6 April reached the Magadan Region in E. Siberia on 24 May. If one were to assume that this bird had moved out of Calcutta on the day after ringing and had covered the approximate straight-line map distance of *c.* 6100 km. within the next 48 days, its average rate of movement would be about 123 km./day. Between northeast India and E. Siberia there are a few records of its movement. La Touche (1921) found the spotted sandpiper very common on passage through Chinwangtao (*c.* 40°N ; 120°E) China, in August, 1st week of September and again in the beginning of May, Kozlova (1932) noted the species as a common breeding bird throughout SW. Transbaikalia, and the Tola and Kangai Regions of Mongolia. It first appeared on Lake Orok Nor on 19 May. Stanford and Ticehurst (1939) found the species to be very common in North Burma from August to the 3rd week of May. In the Nepal Valley, Desirée Proud (1955) found the species to be a common passage migrant during both spring and autumn. From the northwest there are records of the species

as a passage migrant in Punjab : abundant passage migrant from March to May and July to September in the Jhang and Rawalpindi district, (Whistler 1922, 1930) ; Baluchistan plentiful on passage in April and May at Quetta, (Meinertzhagen 1920) ; Ladak, (*c.* 34° 20′N ; 77° 36′E), at altitude of 11,500 ft. on 7 and 14 May in Leh, (Meinertzhagen 1927) ; and one female obtained on 18 September at Yarkand, (Ludlow & Kinnear 1934). In summary, eight out of nine sandpipers ringed in Monghyr and Calcutta were recovered from East Siberia. There were only four recoveries of Bharatpur-ringed birds. These were from Sivaganga (Tamil Nadu), Rail Bazar (W. Pakistan), Krasnoyarsk and Tyumen (USSR). There are observations on the movements of this widespread species between India and Russia from the west as well as the east.

Philomachus pugnax Ruff

The Society has ringed 4293 birds of this species and has had 25 recoveries from Russia and East and West Pakistan and twelve from within India. Twenty-three of the extralimital recoveries are of Bharatpur-ringed birds. The Russian recoveries were reported from a wide area stretching from Turkmenia (*c.* 42° 20′N; 58° 55′E) in the west to Magadan (*c.* 62° 50′N ; 148° 11′E) in the east, and from Tedzhen (37° 23′N ; 60° 30′E) in the south to Norlinsk (*c.* 69° 20′N ; 88° 13′E) in the north. Seven of these Russian recoveries were from points west of longtitude 90°E. and 4 from east of it. There was one recovery of a Bharatpur Ruff four months after ringing from north of Kabul City.

In West Pakistan our birds were recovered near Lahore, at Hafizabad in Gujaranwala district and at Sargodha ; in East Pakistan in Jessore district (*c.* 23°N ; 89° 30′E) and Rupganj in Dacca (*c.* 23° 40′N ; 90° 20′E).

Three interesting inland recoveries of Ruff from eastern India are presented below (Table 3) along with two extralimital ones suggesting

Table 3

Recoveries of the Ruff (*Philomachus pugnax*)

Sl. No.	Sex	Ring No.		Date of ringing	Date of recovery	Place of recovery
1.	♀	B	8245	1-x-1965	23-xii-1966	Gonda, U.P. (*c.* 27° 28′N ; 81° 31′- 82° 46′E)
2.	♂	B	1609	3-x-1965	13-ii-1966	Ramkola, U.P. (*c.* 26° 30′N; 83° 30′E)
3.	♂	AB	8264	20-x-1965	16-ii-1966	Jessore Dist., E. Pakistan (*c.* 23°N; 89° 30′E)
4.	♀	AB	8926	17-x-1965	16-i-1967	Darbhanga Dist. (*c.* 26°N; 85° 54′E)
5.	♂	B	1721	10-x-1965	28-ii-1966	Syrlarya, Uzbek, SSR (*c.* 40° 50′N; 68° 42′E)

an easterly trend of the migratory movement after arrival in the northwest. All the birds were ringed at Bharatpur soon after arrival.

AB 8926 which was recovered 15 months after ringing in Bharatpur had presumably returned from its breeding grounds. B 1721, a male ringed in the same month and place as the others had already reached the USSR (crossing the Himalayas in the Northwest?) by end February. Another female ringed by Dr. Biswas near Calcutta on 23 March 1967 was shot at Dacca on 19 November 1967. There are some interesting observations on the movements of Ruff. In Jhang District, Whistler (1922) found the species to be an uncommon spring passage migrant from late March to 18 May. At Rawalpindi he noted it as a passage migrant found on the plateau in small numbers. In Quetta, Meinertzhagen (1920) observed large flocks on spring passage in March. In Afghanistan, Whistler (1945) found Ruff to be common passage migrant passing through all parts of the country between 19 March and 8 May. Ludlow & Kinnear (1934) quoted Henderson as stating the species to be very common near the city of Yarkand where it bred. In the east Proud (1955) observed and collected Ruff at Manora in Nepal Valley on September 16 ; these were on passage. Ludlow (1928) found the Ruff passing through southern Tibet in autumn in fair numbers. Kozlova (1932) found the species moving in small numbers in the Tola River Valley towards the end of August. To summarise, there are many more records of the movements of Ruff between northwest India and Central Asia, and virtually none from northeastern India.

The few recoveries so far obtained of Bharatpur birds are from points situated in nearly all directions between northwest and east of Bharatpur.

Recoveries of Passerine birds

Out of a total of some 75,398 migratory passerine birds ringed up to August 1969, only 32 have been so far recovered (7 inland, 25 extralimital). There was no recovery at all of the 2895 Swallows (*Hirundo rustica*) ringed all over India. This is perhaps not so surprising since Dorst (1962) records a recovery rate of 0.7% for Swallows in England. Out of 55,962 migratory Wagtails ringed by the Project 7 were recovered within the country and 13 outside our limits.

Motacilla indica Forest Wagtail

Out of 2210 birds ringed in Alleppey District, Kerala and in Gal Oya Valley, Ceylon (Mr. R. Mcl. Cameron) there was only a single recovery. This bird was ringed at Edanad (c. 9° 20′N ; 76° 38′E) on 25 February 1963 and recovered at Tiddim in the Chin Hills of Burma (*c.* 23° 50′N ; 93° 71′E) on 25 April 1963. The species was recorded at Shwebo (*c.* 22°

35′N ; 95° 04′E) by Roseveare (1949) between 26-30 April. The Forest Wagtail has been recorded on the upward and downward migration at Gopaldhara (*c.* 26° 55′N ; 88° 20′E) in the Sikkim area by Stevens (1925). La Touche (1923) recorded the species at Mengts, E. China (*c.* 23° 14′N ; 103° 30′E) both in spring and in autumn, the latest spring date being 5 May.

In Siberia (Neufeldt 1961) it is widely distributed as a breeding bird in Amurland eastward from Kumava Village (*c.* 51° 30′N ; 126° 41′E) and breeds from the first half of June. Between Kerala and Burma, on the eastern side of India, there is very little recent information on the movements of this Wagtail. At Tambaram, Chingleput district (*c.* 12° 30′N ; 80°E), Sanjeevaraj (1960) noted it on 19th September and 28 April. I saw a solitary Forest Wagtail at Reddipalli, Rajampet (*c.* 13° 30′-14°N ; 79°-79′ 30′E) on 30 September, 1969. At Mananur, Farahabad (*c.* 16° 16′N ; 79°E) Sâlim Ali (1933) recorded it on 17 October. Since the species has not been recorded in the Eastern Ghats it has been suggested, (Sâlim Ali 1953) that the bird probably reaches India by way of the Andamans where it has been recorded as arriving in early October and leaving in April (Osmaston 1906). On the whole the information available on the movements of the species is fragmentary.

Motacilla flava Yellow Wagtail

Out of a total of 50,438 Yellow Wagtails (*Motacilla flava thunbergi*, *M. f. beema*, *M. f. melanogrisea* and *M. f. simillima*) 15 were recovered, 5 within the country and 10 extralimital. Those recovered belonged to the Greyheaded and Blueheaded subspecies and were reported from West Pakistan, Afghanistan and the USSR between latitudes 30° and 54°N and longitudes 69° 10′E and 74° 34′E. They were ringed in Kerala and at Bharatpur. The details of ringing and recovery of birds ringed in Kerala, all at Edanad in Alleppey District (*c.* 9° 20′N ; 76° 38′E) are given in Table 4 for comparison.

The birds recovered in W. Pakistan and Kabul (in May) were presumably, on the outward passage. Two Bharatpur Yellow Wagtails were recovered in Kirghiz, SSR and Omsk (*c.* 53° 33′N ; 74° 22′E), in May and June the first 41 days and the second 7 months from the dates of ringing. Between Kerala and north-western India, there are very few records of movement of the Yellow Wagtail to support Phillips's suggestion (1956), that passerine migrants like wagtails, pipits and flycatchers visiting Ceylon follow the western and eastern coasts of Peninsular India. In the Maldives (8°-10°N; 72°-74°E) Phillips (1956) observed the Yellow Wagtail as follows ; 40 miles south of Addu Atoll (*c.* 10° 13′S ; 73° 37′E) *flava* or *beema* observed on 10 April 1957, and an immature of *thunbergi* seen between October 27 and November 1, at Male (*c.* 4° 10′N ;

73° 45′E) Yellow Wagtails were reported to arrive in small numbers in November. In general Phillips considered the yellow wagtails to be passage migrants or irregular winter visitors to Maldives. At Bitra

TABLE 4

RECOVERIES OF YELLOW WAGTAILS (*Motacilla flava*)

Ring No.	Species	Date of ringing	Place of ringing	Date of recovery	Place and co-ordinates
A 5531	*M.f.beema*	18-ii-1963	Edanad, Alleppey Dt., Kerala (*c.* 9° 20′N; 76° 38′E)	13-xii-1963	Erode, Madras (*c.* 11° 20′N; 77° 46′E)
A 44543	*M.f.thunbergi*	5-xii-1963	do	2-v-1964	Gujaranwala District (*c.* 32° 6′N; 74° 11′E)
A 19452	*M.f.beema*	20-xii-1962	do	10-ix-1963	Lakki, West Pakistan (*c.* 32° 36′N; 70° 56′E)
A 13014	*M.f.*ssp ?	2-iii-1962	do	7-v-1964	Kohat, -do- (*c.* 33° 35′N; 71° 20′E)
A 33005	*M.f.beema*	2-ii-1963	do	10-v-1963	Near Nowabah, Afghanistan (*c.* 34° 30′N; 69° 13′E)
A 19082	*M.f.thunbergi*	18-xii-1962	do	8-viii-1963	Kara Balty Kirghiz, SSR (*c.* 42° 50′N; 73° 50′E)
A 30394	*M.f.thunbergi*	21-ix-1963	do	4-v-1964	Chimkunt, Kazakhstan (*c.* 43°N; 70°E)
A 22268	*M.f.beema*	16-xii-1962	do	16-v-1963	Karaganda, Kazakhstan (*c.* 46°N; 72°E)
A 58509	*M.f.thunbergi*	21-i-1964	do	14-v-1964	Karabas, Karaganda, USSR (*c.* 49° 30′N; 72° 55′E)

Island, Laccadives (*c.* 11° 35′N ; 72° 10′E), Mathew & Ambedkar (1963) saw about 6 birds of the race *thunbergi* in October, on the beach.

At Quetta (*c.* 30°N ; 67°E), Meinertzhagen (1920) recorded the Blue-headed Wagtail on spring passage from 16-20 March and the Greyheaded only in August. At Peshawar, Briggs and Osmaston (1928) found the Greyheaded Wagtail passing through in large numbers in both seasons, and up to 13 May in spring. At Jhang District, Whistler (1922) found *beema* abundant on both seasons (passing along the course of the Chenab

River), as did Waite (1948) at Salt Range (*c.* 32° 30′N ; 72° 50′E). Whistler (1930) collected 2 Greyheaded Wagtails at Rawalpindi (*c.* 33° 36′N ; 75° 7′E) on May 4 and quoted Magrath as saying that this Wagtail passes through the vicinity of Tret in considerable numbers up to May. In Afghanistan, Meinertzhagen (1938) recorded the Blue and Greyheaded Wagtails at Ghorband Valley near Bamian (*c.* 34° 84′N ; 67° 87′E) up to 20 April and the Greyheaded at Kunduz (*c.* 36° 40′N ; 68° 50′E) on 20 May. Whistler (1945) found the race *beema* to be a spring passage migrant in northern and the race *thunbergi* to be a double passage migrant to northern and southern Afghanistan. There were no recoveries of the Yellow Wagtails in the east. Desirée Proud (1955) noted Blue and Greyheaded Wagtails as regular passage migrants along Kosi River in the Nepal Valley. In sum the few recoveries obtained of the Yellow Wagtails align favourably with observations published earlier from north and northwestern India, and generally support the supposition that these Wagtails cross the Himalayas in the northwest around Kabul moving along the course of the Indus system.

Motacilla alba White Wagtail

The Project ringed 468 White Wagtails (*Motacilla alba dukhunensis* and *leucopsis*) at Bharatpur, Kutch and Kerala, out of which two birds ringed at Kutch on 16 and 17 March 1961 were recovered at Kiev (*c.* 50° 35′N ; 30° 50′E) in June-July 1961 and at Stalingrad (*c.* 49° 35′N ; 49° 7′E) on 11 July 1961 respectively. The following observations provide useful comparison. In the Salt Range, W. Pakistan, Waite (1948) found the subspecies *dukhunensis* to be a double passage migrant in October and March-April. At Quetta, Meinertzhagen (1920) found this subspecies *dukhunensis* to be a common passage migrant in March and October. At Rawalpindi, Whistler (1930) and Peshawar, Briggs & Osmaston (1928) record this Wagtail as very common in winter. In Afghanistan, Meinertzhagen (1938) found it abundant for a few days about 20 April and passing in flocks at Khanabad and Kunduz about 2 May. Ludlow & Kinnear (1934) referred to 2 specimens collected at Suget Kraul (*c.* 36°N ; 78°E) on 23 and 29 September. In the Nepal Valley, Desirée Proud (1955) found *dukhunensis* to be a common double passage migrant. The subspecies *leucopsis* and *alboides* have been recorded as occurring at altitudes up to the snowline, in the Tsangpo Valley, Southern Tibet, Ludlow (1944) ; at east Everest (17,000 ft.) Kinnear (1922) ; and along the River Vishnumathi in the Nepal Valley in thousands, Proud (1955). The data on the White Wagtails are thus fragmentary.

Passer domesticus parkini and/or **bactrianus**
Migratory House Sparrow

Out of the 1728 birds ringed by the Project at Bharatpur up to 1966 December, 4 were recovered in Kazakh and Tadjik SSR in Russia in May, June, September and November. Between 1967-69 another 3760

TABLE 5

SHOWING THE SUMMARY OF RECOVERY DATA OBTAINED BY THE BNHS/WHO BIRD MIGRATION PROJECT 1959-1969 JULY-AUGUST.

Species	Years	Total number ringed	Total number recovered	Recoveries	
				Inland	Extra-limital
Anas acuta	1964-69	1551	72	8	64
Anas crecca	1962-69	3093	185	10	175
Anas strepera	1966-69	492	6	3	3
Anas penelope	do do	183	7	3	4
Anas querquedula	do do	984	38	7	31
Anas clypeata	do do	621	38	2	36
Netta rufina	1967-69	78	2	1	1
Aythya ferina	do do	428	22	4	18
Aythya nyroca	do do	183	5	2	3
Circus macrourus	1960-62	4	1	..	1
Tringa totanus	1962-67	56	1	..	1
Tringa stagnatilis	do do	283	2	..	2
Tringa glareola	do do	4645	13	3	10
Philomachus pugnax	do do	4293	37	12	25
Motacilla indica	1962-64	2210	1	..	1
Motacilla flava thunbergi	1961-66	15924	7	2	5
Motacilla flava beema	1961-67	18750	4	2	2
Motacilla flava ssp.	do do	12638	4	1	3
Motacilla citreola	1961-67	2890	2	2	..
Motacilla alba dukhunensis	1962-63	175	1	..	1
Motacilla alba ssp.	1959-65	232	1	..	1
Passer domesticus parkini-bactrianus	1962-66	5488	1	..	1
Passer hispaniolensis	do do	4690	4	..	4
Emberiza melanocephala	1959-64	399	2	..	2

sparrows were ringed at Bharatpur; one of these, ringed on 22-I-1969, was recovered at Kulate (*c.* 37° 55′N; 69° 48′E) on 19-V-1969. Dr. E. Gavrilov who recovered two of these, identified the specimens, as *Passer domesticus bactrianus*. The limits of the subspecies *parkini*, Vaurie (1965) are the foothills or outer ranges of the Himalayas in the north and the border of Afghanistan in the north-west. The subspecies *bactrianus* which comes from Transcaspia and Russian Turkestan, according to Dr. Vaurie also winters in Sind and the plains of north-western India. About this point Dr. Sâlim Ali commented ' If these (*bactrianus*) are really different from *parkini* as he (Dr. Gavrilov) main-

tains, it could make a great difference in our conclusion about the origin of the birds. Then again there is the possibility that the birds ringed by us contained both subspecies.' Earlier, Whistler (1922) found large flocks of *Passer domesticus parkini* flying through Jhang District in September and October and quoted Magarth that vast flocks of migrating House Sparrows pass through Kohat in April and May in company with Spanish Sparrows and Rosy Pastor. Meinertzhagen (1938) considered *bactrianus* to be synonymous with *parkini* and found the subspecies migrating at Bamian in Afghanistan from 20-29 April. He found them breeding at Haibak (*c.* 36° 20'N ; 68°E) in mid May and at Ghorband and in Kabul River Valley. Whistler (1945) considers *Passer domesticus griseiogularis* to be the same as Meinertzhagen's *bactrianus*, and records it as a very numerous visitor both in the northern and southern parts of Afghanistan. He referred to it as ' this large migratory House Sparrow so common in Turkestan, Tibet, Afghanistan, Kashmir, and other neighbouring areas, which winters in parts of India'. Thus the migratory House Sparrows visiting Bharatpur may contain 2 different subspecies (if recognized)—*parkini* moving between north India and the outer ranges of Himalayas, and *bactrianus* between North India and Kazakhstan. This can be confirmed only by careful study and by ringing many more sparrows in the Bharatpur area.

Passer hispaniolensis transcaspicus Spanish Sparrow

Out of 1782 Spanish Sparrows ringed at Bharatpur in 1962 and 1963, 3 birds, ringed on 3 April, 25 and 31 March 1962 were recovered in Chokpar (*c.* 43° 02'N ; 73° 43'E) and Dzambul (*c.* 42° 38'N ; 70° 31'E) Kazakh, SSR on 29 May 1962, 2 June 1962, and 9 May 1965 respectively. From another lot of 2908 Spanish Sparrows ringed at Bharatpur between 1967 and 69, one ringed on 17-xii-1967 was recovered in Dzambul (*c.* 42° 38'N ; 70° 31'E) on 5-vii-1968. In USSR, *vide* Gavrilov (1963) ' It is distributed in Kazakhstan from the administrative frontier at the south, northward as far as the valleys of the Rivers Sir-Daria and Chu. It is also found in the lowlands adjoining the Kirgizsky Zailyisky and Dzungarsk, Ala-Tau north to Lake Alakoul. It reaches Kazakhstan in April and May'.

Emberiza melanocephala Blackheaded Bunting

Out of 399 birds ringed, there were two recoveries. One of these, ringed at Bhuj, Kutch (*c.* 23° 15'N ; 69° 49'E) on 26 September 1959, was recovered at Krasnodar (*c.* 45° 30'N ; 40° 45'E) on 26 May 1961 ; the other ringed by Yuvraj Shivrajkumar at Jasdan (*c.* 22°N ; 71°E) on 22

September 1964, in Famagusta, Cyprus (*c.* 35° 6′N ; 33° 57′E) on 16 May 1965. It is widely distributed, in south-eastern Europe eastward to Iran and in parts of Italy, Greece, Bulgaria, Rumania, Cyprus, Crete, Iraq and in Russia north to the region of Stalingrad (Vaurie 1965).

There was one recovery of a Rosefinch *Carpodacus erythrinus* ringed at Bharatpur on 18-iii-1969, in the Vligunousk region near Inza (*c.* 53° 50′N ; 46° 21′E) ; another of a Great Reed Warbler *Acrocephalus stentoreus* ringed at Salt Lake, Calcutta on 10-iv-1965 in the Uzbek SSR, (*c.* 39° 41′N ; 66° 58′E) on 3-ix-1968.

Summary

I. The recovery rates of birds ringed by the Society's Migration Project is very low compared to recovery data from European ringing study stations. In all only (0·40%) of the banded birds were recovered, and from only 25% of the migratory species ringed.

II. The highest recoveries have been of migratory ducks and teals ; among the waders, Spotted Sandpipers and Ruffs, and among the passerine birds Yellow Wagtails have yielded some significant results. This is probably due to the fact that ducks and teals are regularly shot by sportsmen.

III. Generally, birds ringed by the Society were reported mainly at places in West and East Pakistan, and USSR. Ducks and teals ringed here were recovered in the breeding area of the Kazakhstan and East Siberian populations of Wildfowl of the USSR. More than 50% of all duck recoveries were from the Kazakhstan area. Individually 79% of the Pintail recoveries, 77% of the Common Teals, 80% of the Garganeys and 82% of the Shovellers, were reported from Isakov's Kazakhstan population area. However, 61% of the Common Teals and all the Shovellers ringed in the more easterly part (Bihar) were reported in the East Siberian parts of the USSR.

IV. Four Garganeys and one Pintail ringed at Bharatpur were recovered in Andhra Pradesh and Tamil Nadu.

V. Among the passerine birds, the few recoveries obtained were from West Pakistan, Burma, Afghanistan, USSR and Cyprus.

In conclusion the recoveries of ducks and teals ringed by the Society suggest that the ducks and teals wintering in India belong to at least two separate USSR wildfowl populations as categorised by Isakov (1965), namely, the Kazakhstan population and the East Siberian population. Recoveries of passerine and non-passerine birds tend to support—by and large—the hypothetical routes of migration through northwest Pakistan

and Afghanistan and along the tributaries of the Indus and Oxus postulated by earlier workers. There is also a suggestion, but not sufficient evidence as yet, that a considerable amount of trans-Himalayan migration takes place directly across the mountain barrier. To secure incontrovertible proof of this, and an estimate of the extent of such migration is one of our important aims. The recovery of Bharatpur-ringed birds in Andhra Pradesh and Tamil Nadu suggest that certain species of ducks and teals from northwestern India move south across the Deccan. Generally speaking the recoveries of India-ringed birds, are as yet too meagre to suggest any definite routes of migration or patterns of dispersal. But our data at this stage serve to broadly supplement those obtained by Russian workers for extralimital movements of the Anatidae. We have no recoveries at all from the eastern Himalayas or from countries beyond, like Tibet, China and Mongolia, though some of our birds must undoubtedly go there. A curious and rather striking anomaly is that while we obtain regular and sizable recoveries of Indian-ringed Anatidae in the territories of the USSR, we have been getting practically no recoveries at all of Russian-ringed birds in India. And this notwithstanding the fact that ringing is done on a much vaster scale in USSR than in India.

Acknowledgements

I am grateful to Dr. Sálim Ali and to Shri J. C. Daniel, for their help and criticism in the preparation of this paper.

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